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Endangered Destinations

Places, like species, can vanish forever. A look at some unique, imperiled treasures

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First-time visitors to the Great Barrier Reef might think they've swum into an Impressionist painting. The reef—a living kaleidoscope of thousands of species, many unique, threatened, or both—has no equal on Earth, which explains its magnetic appeal to people the world over. Some 2 million tourists flock to northeast Australia every year to experience the wonder of the Coral Sea, and they inject \$5.5 billion into the country's economy in the process.



Now imagine one possible future. It's 2050, and rising sea temperatures caused by global climate change have killed the symbiotic algae that live inside the coral and sustain it. Their loss has left huge swaths of reef bleached and lifeless. Runoff from coastal farms, meanwhile, has clouded the water with sediment and poisoned sea grasses with pesticides. Almost all the fish are gone, and those that remain are hounded by boatloads of sunscreen-slathered tourists. This worst-case scenario is extreme but not impossible. Tourism, pollution, and coral bleaching already threaten the reef. A report commissioned by the Queensland government and the World Wide Fund for Nature in 2004 predicted that 95 percent of

the reef's living coral could die by midcentury if ocean temperatures there rise by 2.7 degrees F, as scientists predict.

The Great Barrier Reef is just one of a growing number of unique places around the world that are under siege by forces both local and global. From Antarctica to the Everglades, from Venice to the mountainous forests of East Africa, climate change and encroaching civilization imperil many of the world's most distinctive destinations. The list of dangers includes rising sea levels, pollution, development, changing weather patterns, even the

presence of well-meaning visitors. And what's at stake encompasses many of the world's natural and cultural treasures. Like species, places can become endangered. They can also be saved. Already some local rescue efforts are paying off, while preserving other places will require nothing short of a concerted planetwide effort.

"If you look hard enough, you can uncover some sort of looming threat in just about any destination," says Kimberly Lisagor, coauthor of *Disappearing Destinations: 37 Places in Peril and What Can Be Done to Help Save Them*, published last month by Vintage Books. Climate change is the most pervasive danger, she says, and also one of the toughest to fight. Some iconic places are literally melting away. Climatologists predict the glaciers of Mount Kilimanjaro, Africa's tallest peak and a linchpin of Tanzania's nearly \$1 billion tourism industry, will be gone in less than 15 years. Glacier National Park in Montana may have to find a new name if its glaciers disappear before midcentury as they're expected to. And in Antarctica, which ice researcher Stephen Ackley of the University of Texas-San Antonio calls "the last pristine ecosystem on Earth," the disappearance of seasonal sea ice is every bit as much a threat to penguins and seals there as it is to polar bears and other species in the Arctic.

The rising sea. Less ice means more water, and since many of the world's great cities are close to the coast, rising oceans may soon be lapping at their gates. Picture Venice as an archipelago of rooftop islands, with scuba divers swimming down its canals. A combination of sinking land, worsening storms, and rising sea levels is already nudging things in that direction. The seasonal high tides locals call *acqua alta* now flood the city's famous lagoon a hundred times a year instead of six or seven, as they did a century ago. Salt water flowing in from the Adriatic Sea is causing centuries-old brick walls to crumble. "The city is being eaten by water," says Anna Somers Cocks, chairman of the nonprofit group Venice in Peril. "Ecologically, it's completely artificial, like New Orleans. It will survive as long as we want it to survive." The Italian government is hoping that a controversial \$7 billion system of movable floodgates, nicknamed "Moses," will save the city. Any allusion to the parting of seas is entirely intentional. When finished in 2012, the project will consist of 78 gates, each 98 feet high, that can be raised or lowered from the seabed in response to changing tides. Whether this will just postpone the inevitable—a slow-motion surrender to the rising sea—remains to be seen.

The threatening prongs of climate change creep inward from the coasts. The Tower of

London and the Palace of Westminster could both be damaged by more frequent and intense flooding of the Thames River caused by rising sea levels and changing storm patterns, according to a 2007 report by UNESCO's World Heritage Center. The millennium-old buildings survived the bloody English Civil War and the Nazi blitz and now host millions of visitors every year. But the risk of a catastrophic flood is estimated to rise fivefold by 2050, says May Cassar of the Centre for Sustainable Heritage at University College London. "These monuments were inscribed on the World Heritage List for their universal value," she says. Any damage would be "a cultural loss not just to the British but to all of us." Across northern Europe, moreover, rising humidity levels could speed the spread of microbes whose acidic excretions eat away at stone cathedrals and marble monuments, according to a recent European Union-funded environmental study. And at the summit of Kilimanjaro, halfway between sea level and space—and almost halfway between the poles—climate scientists themselves may lose big to climate change: Doug Hardy of the University of Massachusetts is one researcher who has been racing to glean ancient meteorological data from ice cores before they melt away. "We don't have many historical measurements from that part of the planet," he says. "That record of environmental change will be entirely gone in a few decades."

Some menaces are of a more local nature—and can be tackled accordingly. When the Taj Mahal started turning from white to yellow over a decade ago, most likely from airborne pollutants that were staining the grand mausoleum's pearly skin, India's Supreme Court stepped in. Thousands of nearby factories, kilns, and iron foundries have since been moved or closed, and now over 8,000 tourists a day take electric buses and horse-drawn carriages to visit the monument. Yet across Asia and elsewhere, population growth and intensifying urbanization are bound to threaten other such cultural sites, while new roads slice across the paths of migrating species, and slash-and-burn farmers nibble at the edges of nature reserves and virgin forests. And while tourism can be a destination's—even an entire country's—greatest revenue source, it often leaves its own heavy footprints. Hotels, restaurants, airports, and other facilities and services aimed at visitors bring development to the doorstep of some of the world's most delicate places.

Ecuador's Galápagos Islands are a case study in how travelers can be both part of the problem and part of the solution. The unique, fearless wildlife that evolved on the isolated Pacific archipelago draws over 120,000 visitors and \$400 million in revenue every year, and the numbers are rising. "These islands are an incredible natural laboratory for

evolution," says Michael Romero of Tufts University, who studies native marine iguanas. "You can see the history of life." One can also foresee a potential ecological tragedy. Nonnative plants, animals, and diseases have already ravaged parts of the sensitive ecosystem, and overfishing of marine life is an ongoing problem. More than 1.3 million gallons of diesel fuel for tour boats and generators was shipped in from the mainland last year, and a 2001 oil tanker accident spilled over 130,000 gallons of diesel. "The question," says David Blanton, former director of the International Galápagos Tour Operators Association, "is whether the Galápagos will follow the historic cycle of boom-and-bust tourism development, destroying what originally attracted visitors in the first place."

Hopeful signs. There and elsewhere, measured steps have been taken to safeguard destinations in jeopardy. The same winds that brought Charles Darwin aboard the HMS Beagle in 1835 are now being harnessed to provide the Galápagos with renewable power, reducing dependency on transported fuel. Last fall, three enormous wind turbines were installed on San Cristóbal Island, where most of the archipelago's 20,000 or so inhabitants live, as part of a \$10.8 million project to wean the Galápagos from fossil fuels. Professional sharpshooters helped rid Isabela Island of tens of thousands of destructive feral goats, introduced by early sailors, in only six years. Tourism is still highly regulated; only 1 percent of the islands' land area is open to visitors, who must follow professional guides at all times.

And anyone who finds Nemo (or any clown fish, for that matter) amid the sea anemones of the Great Barrier Reef should give thanks to forward-thinking conservation efforts set in motion decades ago. To minimize the impacts of millions of visitors, an eco-certification program has been set up for local tourism operators, who cooperate with the Great Barrier Reef Marine Park Authority to make sure visitors know that the reef is as fragile as it is dazzling. In 2004, no-fishing zones were expanded to include over a third of the marine park. Studies have shown that these result in larger fish and more of them—one found coral trout numbers increased more than sixfold in "no-take" areas. Even fishermen now support the idea, counting on the spillover of fish to parts of the reef where fishing is permitted. The Queensland state government also put a Reef Water Quality Protection Plan into action to decrease silt and runoff of agricultural chemicals and fertilizer from nearby fields.

The effort in Australia has been hailed as a model for marine conservation. The goals of the

plan are "as high as anywhere in the world," says Steve Palumbi, a marine ecologist at Stanford University, and "everything looks quite hopeful" after the most recent steps. With so many stakeholders united, the reef is a great example of conservation through collaboration, says Kelly Bricker of the International Ecotourism Society.

Responsible tourism can be a troubled place's salvation. Bricker's message to conscientious visitors: Educate yourself and tread lightly. Pick travel companies that make conservation a priority, support local conservation programs, and get to know the specific problems that affect your destination and how you can minimize or eliminate your own contribution.

"Without tourism," says Jonathan Tourtellot, director of the National Geographic Society's Center for Sustainable Destinations, "habitats such as Costa Rican rain forests would be grazing land by now and the only elephants left would be in zoos."

That helps explain why a mountain gorilla is worth more per hour than a Manhattan psychiatrist. Poaching, forest clearing, and armed conflict threaten these animals, which share 98 percent of our genes. Fewer than 700 survive on the lush slopes of the Virunga volcanoes in East Africa where Rwanda, Uganda, and Congo meet. Recently, both Rwanda and Uganda more than doubled their gorilla visitation fees to \$500 per person, and paying tourists still come from afar for carefully controlled one-hour encounters. Some of the money is directed back into local communities, giving residents an incentive to protect these gentle giants.

But some problems are so large in scope that only a massive, government-sponsored conservation effort has any hope of success. Over the past century, the swamps, marshes, and pinelands of Florida's Everglades have been crisscrossed by canals, poisoned by pesticides, and squeezed by agriculture and urban development. The Comprehensive Everglades Restoration Plan, passed by Congress in 2000, includes new levees, canals, and water-control structures to provide flood control and protect endangered native fish and wildlife in the largest wilderness in the United States east of the Rocky Mountains. It's the biggest restoration project in history, with a price tag that has already passed \$10 billion. Yet despite these efforts, some predictions hold that a combination of more severe storms and rising sea levels could inundate most of the "River of Grass" with salt water by the end of the century.

Such a long list of challenges can seem overwhelming; witness the recent rise of "last-

chance tourism," with a see-it-before-it's-gone mindset that brings visitors to Europe's melting glaciers and polar bear habitat in northern Canada. But an equally long list of solutions, both tried and planned, offers a balance of hope. Even after finishing her book, Lisagor says, she still has faith that these places can be saved, though "it's going to take a major effort." Unless local and global issues are tackled, she says, "we can expect to see a sad, steady procession of the world's great places as they march out of the guidebooks and into the history books."

Losing entire ecosystems like the Amazon, the Everglades, or the Great Barrier Reef would be environmental disasters on a planetary scale—far beyond mere tourist tragedies. But the survival of cultural destinations is critical, too, Bricker says, even to those who may never see them in person. Places like Venice and the Taj Mahal "help us identify our progress as human beings," she says. "We should be saying, 'What can I do to be sure my grandkids can see this in the future?'"

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